

Trigonometric Graphs and Ratios of Any Angle

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **22**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** Circle the value of x for which $\cos x = -1$ and $0^\circ \leq x \leq 360^\circ$

[1 mark]

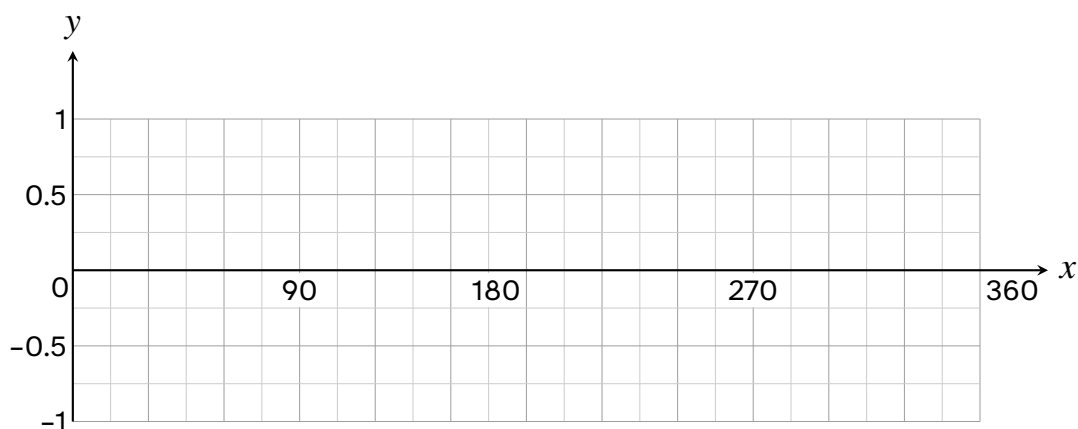
90°

180°

270°

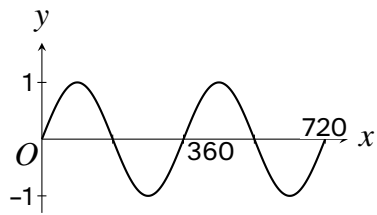
360°

- 2** On the axes, sketch $y = \sin x$ for $0^\circ \leq x \leq 360^\circ$

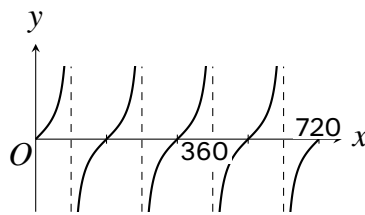


[2 marks]

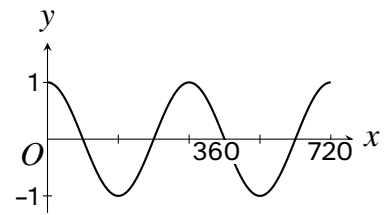
- 3** Here are sketches of $y = \sin x$, $y = \cos x$ and $y = \tan x$ for $0^\circ \leq x \leq 720^\circ$, in a different order.



A



B



C

- (a) Write down the letter of the graph of $y = \cos x$

[1 mark]

Answer _____

- (b) Write down the number of solutions of $\tan x = 2$ for $0^\circ \leq x \leq 720^\circ$

[1 mark]

Answer _____

- (c) Write down the number of solutions of $\cos x = 1$ for $0^\circ \leq x \leq 720^\circ$

[1 mark]

Answer _____

- 4 $\sin 28^\circ = k$
Write down, in terms of k , the value of

(a) $\sin 152^\circ$

[1 mark]

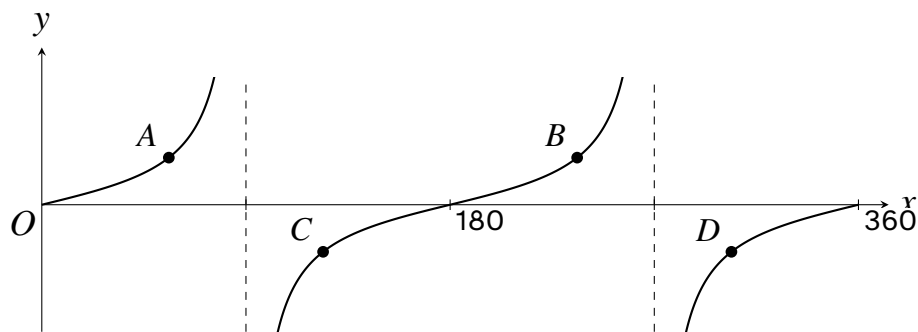
Answer _____

(b) $\sin 332^\circ$

[1 mark]

Answer _____

- 5 Here is a sketch of $y = \tan x$ for $0^\circ \leq x \leq 360^\circ$



$A(56, p)$, B , C and D are points on the curve.

B has y -coordinate p

C and D have y -coordinate $-p$

- (a) Write down the x -coordinate of B .

[1 mark]

Answer _____

- (b) Work out the x -coordinates of C and D .

[2 marks]

C : _____ D : _____

- 6 (a) The equation $\sin x = k$ has exactly three solutions for $0^\circ \leq x \leq 360^\circ$
Write down the value of k .

[1 mark]

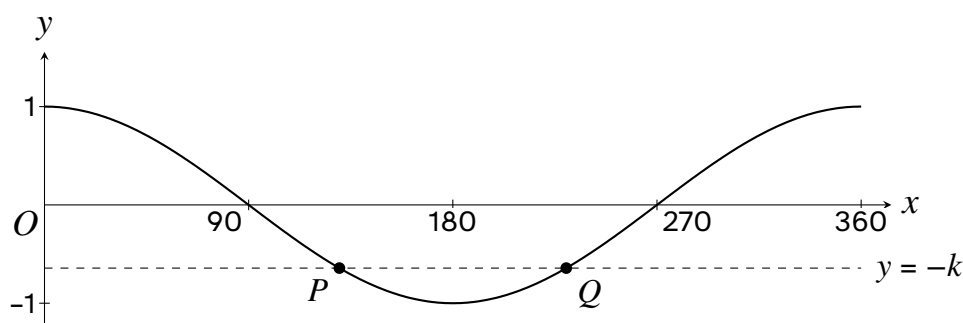
$k =$ _____

- (b) The equation $\sin x = m$ has exactly one solution for $0^\circ \leq x \leq 360^\circ$
Write down the two possible values of m .

[1 mark]

$m =$ _____ or $m =$ _____

- 7 Here is a sketch of $y = \cos x$ for $0^\circ \leq x \leq 360^\circ$



The line $y = -k$ meets the curve at the points $P(130, -k)$ and Q .

- (a) Write down the x -coordinate of Q .

[1 mark]

Answer _____

- (b) The line $y = k$ meets the curve at two points.
Work out the x -coordinates of these two points.

[2 marks]

Answer _____ and _____

